

Perry, as applied to claim 1, and further in view of Chromecek, U.S. Patent no. 4,962,133 ("Chromecek").

This response fully addresses the Examiner's rejection. Accordingly, the present application is in condition for allowance. Favorable consideration of all pending claims is therefore respectfully requested.

Applicants, through the undersigned wish to thank Examiner Menon supplying a clean copy of Perry, in accordance with the Applicant's request of April 2003, which has permitted the Applicants to complete their analysis of the issues currently presented in this prosecution.

Concerning the rejection of claims 1-7 and 10 under 35 U.S.C. §103(a) as allegedly unpatentable over the '994 patent in view of Perry, the Examiner contends that:

"JP (994) discloses a process for separating essential oils comprising steam distillation (page 3, Para 0001) to a mixture containing essential oils and water, contacting with divinyl benzene polystyrene adsorbent or activated carbon, and then desorbing the essential oils (page 3, Para 0001) as in instant claim 1 and 2. The water (hydrophilic phase) temperature is at 60° C (page 8, page 8, Para 0020) as in instant claim 3; the hydrophobic adsorbent is synthetic polymer-divinyl benzene cross-linked-polystyrene, activated carbon, etc, as in instant claim 4 and 5. (page 8: 0016,0017); material is Cyprus (page 3: claim 2) as in instant claim 6; Cyprus or yellow oils (page 11:0030) as in instant claim; and the process is continuous as in instant claim 10 (page 11:0029).

"JP (994) is silent to recycling the hydrophilic solvent, water, as in claim 1 of the instant application. *Recycling of solvent in extractive distillation is a common method taught in a standard textbook of Chemical Engineering*, such as Chemical Engineer's Handbook, Perry and Green, 6th edition (see pages 13-53 through 13-57, and the figures). It would be obvious to one of ordinary skill in the art at the time of invention to recycle the water used in the process. One of ordinary skill in the art at the time of invention could choose to recycle water in the process of JP (994) to recycle solvents in extraction/distillation process for recovering the solvent and sensible heat of the solvent as taught by Perry and Green" Office Action of February 25, 2003 at pages 2 and 3. [Emphasis Supplied herein]

The applicants respectfully submit that, as they explain below, the combined teachings of

JP (994) and Perry fail to teach a steam distillation process that employs a recycling step.

First, it should be noted that “steam distillation”, as recited in the pending claim¹ is understood by the skilled artisan to be a process that is not a “distillation” process, as the term “distillation” is used in the art. According to the text “Flavourings” by E. and H. Ziegler, 1998,

“Carrier distillation... components with high boiling points can be distilled close to the boiling point of water with vapour composition according to their vapour pressure (vacuum), the steam distillation can be carried out at lower temperature...(page 74).”

“Extractive distillation...it is the aim of extractive distillation to find a component to be added, a so-called extracting agent, increasing the relative volatility considerably. This is achieved by the addition of a high-boiling extracting agent which strongly influences the activity coefficient of one constituent in the azeotrope mixture. The extracting agent is introduced at the head of the column and removed together with the less volatile component from the sump, while the more volatile component is distilled solely from the head... The added component is also selected with regards to good separability from the forming mixture. It is the intent of extractive rectification to apply continuous processes which allow feedback of the added component. At example for the usage of extractive distillation is the separation of the closely boiling mixture acetone/methanol. The employed high-boiling extracting agent ethylene glycol is introduced in the correct ratio at the head of the column. (Pages 76-77)”

Thus, steam distillation is a carrier distillation. It is a process in which steam is introduced into an environment where an essential oil-containing substance is present.

Components with high boiling points can be distilled close to the boiling point of water in which the vapour composition corresponds to the vapour pressure of the components. The oil is “sweated out”. The aim of extractive distillation is to identify a component to be added, a so-called extracting agent, which dissolves an azeotrope or a closely boiling mixture of components by increasing the relative volatility considerably. The extracting agent is introduced at the head of the column and removed together with the less volatile component from the sump, while the

1. For a specific reference to “steam distillation” in the claims, see claim 1, subparagraph (i), line 7.

more volatile component is distilled solely from the head. The extracting agent also has to be selected with a view to it having good separability from the sump mixture. Extractive distillation is a separating technique which is intended to be carried out continuously so that the extracting agent can be recycled.

On the other hand, “distillation” such as taught by Perry, “separates different components from each other by means of the addition of a high-boiling solvent to a tray of a column to alter the relative volatilities of the components in the main feed to the column. Further regarding Perry, it is noteworthy that the list of 32 solvents on page 13-55 does not include water, which is used in the present invention. In contrast, the technique of steam distillation recited in the present Claim 1 and demonstrated in Example 1 in the specification can be explained as follows. After extracting some of the essential oils from the essential oil containing material by mixing with a large volume of water, the material/water mixture is then subjected to steam distillation which results in more of the essential oils being extracted from the material and the target essential oils becoming more concentrated in the solution resulting from condensing of the distilled steam. The person skilled in the art would realize that the steam distillation process is fundamentally different from an extractive distillation process in which a high-boiling solvent is added to a column to facilitate the separation of a mixture of feed components by altering their relative volatilities.

Accordingly, it is the applicants’ position that the person of skill in the art would recognize the disparities between steam distillation (JP 994) and extractive distillation (Perry). The teachings of the references do not provide motivation to the person of skill in the art that would allow that person to combine JP 994 with Perry, and accordingly, the teachings cannot be combined under section 103 (a). It is submitted that only with hindsight knowledge of the

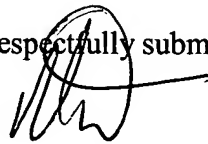
present invention that the teachings may be combined, which cannot provide the legal support for the section 103 (a) rejection.

Concerning the rejection of claim 8 and 9, the additional reference (Chromecek) fails to cure the deficiencies set forth above with regard JP 994 in view of Perry. Notably, Chromecek contains no teaching, and certainly no motivation to recycle the hydrophilic phase.

Accordingly, the applicants request that the Examiner reconsider the rejections of claims 1-10 under 35 U.S.C. §103(a) regards the rejections transversed.

Wherefore, based upon the foregoing, it is respectfully submitted that the present application is in condition of allowance, and a relative early reply to this paper would be appreciated.

Respectfully submitted,



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